What is claimed is:

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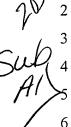
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1. An electronic structure comprising

a substrate having a dielectric layer having a via opening therein; having sidewalls and bottom surfaces:

a barrier layer deposited on the sidewalls and bottom surfaces of the via opening; and copper electrodeposited from a bath having a pH of about 12.89 or greater on the barrier layer on the sidewalls and bottom surfaces of the via opening.

- 1 2. The structure of claim 1 wherein the thickness of the copper is about 10 nanometers
- 2 to about 100 nanometers.
- 1 3. The structure of claim\1 wherein the thickness of the copper is about 20 to about 50
- 2 nanometers.
- 1 4. The structure of claim 1/ wherein the barrier layer is selected from the group
- 2 consisting of tungsten, titanium, tantalum, nitrides thereof, silicon nitrides thereof and alloys
- 3 thereof.
- 1 5. The structure of claim wherein the barrier layer having thickness of at least about 4
- 2 nanometers.
- 1 6. The structure of claim 1 wherein the dielectric layer comprises silicon dioxide.
- 1 7. The structure of claim 1 wherein the vialopening has an aspect ratio of greater than
- 2 3:1.
- 1 8. The structure of claim 1 wherein the barrier layer comprises tungsten.
- 1 9. The structure of claim 1 wherein a free of a seed layer between the barrier layer and
- 2 copper.



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10. A method of fabricating an electronic structure which comprises forming an

insulating material on a substrate; lithographically defining and forming recesses for lines

and/or via having sidewalls and bottom surface in the insulating material in which

interconnection conductor material will be deposited;

depositing a barrier layer on sidewalls and bottom surfaces of the recesses;

depositing copper on the barrier layer by electroplating from a both having a pH of

about 12.89 or greater, a source of cupric ions and a complexing agent and at a current

8 density of about 5 to about 25μA/cm².

1 11. The method of claim 10 wherein the copper is deposited to provide a thickness of

2 about 10 nanometers to about 100 nanometers.

1 12. The method of claim 10 wherein the copper is deposited to provide a thickness of

2 about 20 to about 50 nanometers.

1 13. The method of claim 10 wherein the barrier layer is selected from the group

consisting of tungsten, alloys of tungsten, titanium, alloys of titanium, titanium nitride,

tantalum, tantalum nitride and tantalum silicon nitride.

14. The method of claim 10 wherein the barrier layer has a thickness of at least about 4 nanometers.

15. The method of claim 10 wherein the barrier layer is tungsten.

1 16. The method of claim 10 wherein the dielectric is silicon dioxide.

1 17. The method of plaim 10 wherein the recess has an aspect ratio of greater than 3:1.

18. The method of claim 10 wherein the electroplating bath is at a room temperature of

2 about 22° C.

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- 19. The method of claim 10 wherein the source of cupric ions is CuSO₄, and the complexing agent is EDTA of salt of thereof..
- 1 20. The method of claim 19 wherein the electroplating bath comprises sodium
- 2 hydroxide or potassium hydroxide.

Syb 1 Bb 2

- 21. The method of claim 10 wherein the electroplating bath further comprises a stabilizer and surfactant.
- 22. The method of claim 21 wherein the stabilizer is 2,2' -bipyridyl.
- 1 23. The method of claim 10 wherein the plating bath further comprises cyanide ions.

An aqueous copper plating bath comprising a source of suprie ions and a

- 2 complexing agent, having pH at least 12.89 and a deposition rate of at least 15 μA/cm².
- 1 25. The plating bath of claim 24, wherein the source of cupric ions is CuSO₄ and the
- 2 complexing agent is EDTA or salt of thereof.
- 1 26. The plating bath of claim 24 which further comprises sodium hydroxide.
- 1 27. The method of claim 25 wherein the electroplating bath further comprises a
- 2 stabilizer and surfactant
- 1 28. The structure obtained by the method of claim 10.

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add A3